TDRSS Demand Access Concept Development

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Semi-Annual Review of the FY97 SOMO/MO&DSD Technology Development Program

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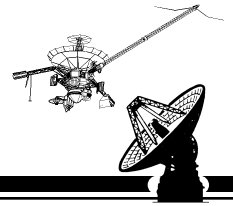
TDRSS Demand Access Concepts
Objective and Significance



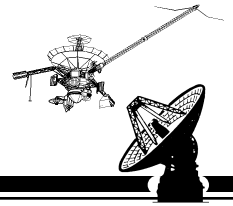
GSFC

Overall Objective

To support implementation of a TDRSS Multiple Access (MA) Demand Access service capability that enhances MA service to existing users and permits significant expansion of the TDRSS user community while reducing Space Network MA operations complexity.

Goals	Significance
#1: Identify/Support new candidate DA users by performing analyses needed to develop user ops concept and define benefits of DA operations.	• **Supports expansion of the TDRSS user community by actively seeking new users that could benefit from DA service.** • **Ensures that DA concept meets needs of emerging users and that users receive tangible benefits from planned DA service.**
#2: Support expansion of the MA return service capability through analyses and trade studies that identify the best approaches to expansion.	• **Establishes framework for MA service expansion to assure that system can evolve to meet needs of emerging users.**
#3: Support development of the Demand Access concept and perform analysis and system engineering needed to assure successful implementation	• **Assures efficient implementation of a Demand Access architecture that meets both user and Space Network needs.**

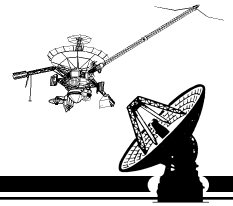
TDRSS Demand Access Concepts
FY97 Accomplishments



Support to MA Service Expansion (Goal #2)

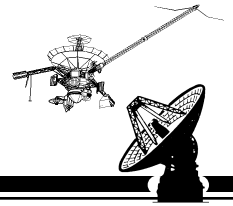
- **Completed trade study to examine approaches to substantially increase MA return link beamformer capacity:**
  - **Permits expansion of MA return service to include full-time coverage for orbiting users or support to large numbers of new stationary users.**
  - **Task is coordinated with effort to develop low cost MA receiver capability.**
- **Determined that substantial size and cost reductions of MA beamforming equipment are possible:**
  - **Reduction in size of single beamformer from 30 cards to 2-3 circuit cards enables 40-50 beamformers in space currently reserved for six.**
  - **Size/cost reductions achieved with no reduction to beamformer performance under normal operations.**
- **Documented findings in a final report.**

TDRSS Demand Access Concepts
FY97 Accomplishments (Cont'd)



- **Completed beamformer specification and SOW.**
- **Supported development of an article on TDRSS options for support to small satellites for the GSFC Research and Technology Report.**
- **Supported pre-phase A study of BASIS mission whose objective of notifying astronomers on earth of the location of a gamma ray burst withing 5 seconds can be achieved by TDRSS demand access service.**

TDRSS Demand Access Concepts
FY97 Goals



- **Demand Access Systems Engineering:**
  - **Perform necessary systems engineering and analysis efforts to enable Demand Access implementation.**
  - **Develop project Management and Implementation Plans.**
  - **Generate functional and performance documentation.**
- **Develop initial MA Demand Access end-to-end simulation capability:**
  - **Supports DA systems engineering and requirements development.**
  - **Provides framework to be used to demonstrate Demand Access service benefits to candidate new users.**
  - **Will leverage existing GSFC capabilities: CLASS, CAGE, DSDS, and other existing tools used for Demand Access analysis.**

TDRSS Demand Access Concepts
Schedule